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Art. XI.—*New Species of a Crinoid (Lecanocrinus) and a Cephalopod (Ophidioceras), from the Silurian of Yass.*

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(With Plate X.)

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Introduction.

The crinoid here described as *Lecanocrinus breviarticulatus* was presented many years ago to the National Museum by Mr. A J. Shearsby of Yass, who from time to time added many interesting and unique specimens to the Collections.

It was held over in the hope of discovering further specimens, but up to the present it remains unique. It is the first occurrence of the genus in Australia.

The Cephalopod *Ophidioceras giblini* has also the distinction of being the first occurrence of that genus in Australia. Although partially preserved as a cast, some of the fine ornament of the shell is still visible, enabling a more precise diagnosis to be given than from a mere cast and mould. Professor Giblin has presented this and another unique Silurian specimen to the Commonwealth Collection.

Class CRINOIDEA.

ORDER FLEXIBILIA.

Fam. LECANOCRINIDAE.

Genus **Lecanocrinus** J. Hall.

LECANOCRINUS BREVIARTICULATUS, sp. nov.

(Pl. X., Figs. 1-6.)

Description of Holotype.—Crown broadly ficiform in outline, but somewhat compressed, due to inclusion in shaly limestone, Height, 34 mm.; greatest width, 31.5 mm. Dorsal cup showing vestiges of two infrabasals, a basal (cf. postbasal), a radial (1st left R), an upper plate, and the centrodorsal or summit stem-joint, which is much thicker and wider than the adjacent columnals.

The infrabasals are moderately small and unequal; the postbasal(?) fairly large, apparently pentagonal, but not clearly defined on all margins; radials large, pentagonal, and more or less shield-shaped, faceted above and steeply sloping inwards, bearing broad low axillaries which are medially grooved on the ventral size, and visible where worn down. Radianal hexagonal, apparently resting on the right upper truncated side of the postbasal, and between the left and right radials. Special anal slightly

larger than the radianal and subrectangular, resting on the post-basal, and supported between the right (?) basal and the right postradial.

Arms dichotomous, twice branched; pinnules simple. Brachials low and numerous, sutures crenulate, the lower having on the inferior surface toothed projections which fit into corresponding sockets in the adjacent ossicles. Primibrachs 2, wide and low; secundibrachs about 6, gradually decreasing in height, distally, and one-half the width of the primibrachs. Arms spirally inrolled at the distal ends, around the summit of the crown. Summit of tegmen visible, showing a pentagonal (?) madreporite with a distinctly perforated area, and connected with what is apparently a portion of the ventral tube.

Columns (preserved as hollow mould) roundly cylindrical, rather wide; average diameter about 5 mm.; strongly curved, especially near the junction with the cup; 35 mm. in length, so far as preserved, the distal extremity missing. Stem-joints, as shown by a wax impression, very low, alternating, discoidal and flanged, with a minutely tuberculate surface. The proximal joints are thinner, and consequently more numerous. This character, by the way, appears to be more typical in the taxocrinids.

Observations.—This specimen, although not so perfectly preserved as could be desired, shows a definite relationship with the genus *Lecanocrinus,* and may be compared in general features with *L. billingsi* Angelin, which occurs in the Silurian of Gotland (Angelin, 1878, p. 12, pl. xxii., figs, 25, 25*a*). It has a considerably larger crown than Angelin's species, more numerous lower arm-ossicles, and more distinctly granulated columnar joints.

Another genus which at first sight bears resemblance to the present specimen is *Ichthyocrinus pyriformis* (Phillips) from the Wenlock Series of Dudley and Kendal (*Cyathocrinites pyriformis* Phillips, 1839, p. 672, pl. xvii., fig. 6, and Angelin, 1878, p. 13, pl. xvii., fig. 6).

The presence of a radianal and special anal plate in our fossil shows, however, that it cannot be referred to that genus. The tegmenal portion of the crown seems to have been previously unobserved in *Lecanocrinus,* and the same may be said for *Ichthyocrinus* (Wachsmith and Springer, 1869, p. 256). Another feature in favour of placing our crinoid with *Lecanocrinus* is the regular size of the columnars throughout. From *Euspirocrinus,* which also has simple, dichotomous and inrolled arms, the present example differs in the heavily plated calyx, the narrower primibrachs, and the distinctly regular columnar joints.

Horizon and Locality.—Silurian. Hatton's Corner, Yass, New South Wales. Collected by Mr. A. S. Shearsby, F.R.M.S., and presented to the National Museum. Reg. No. 13897.

Class CEPHALOPODA.

Order NAUTILOIDEA.

Fam. OPHIDIOCERATIDAE.

Genus **Ophidioceras** Barrande.

Ophidioceras giblini, sp. nov.

(Pl. X., Fig. 7.)

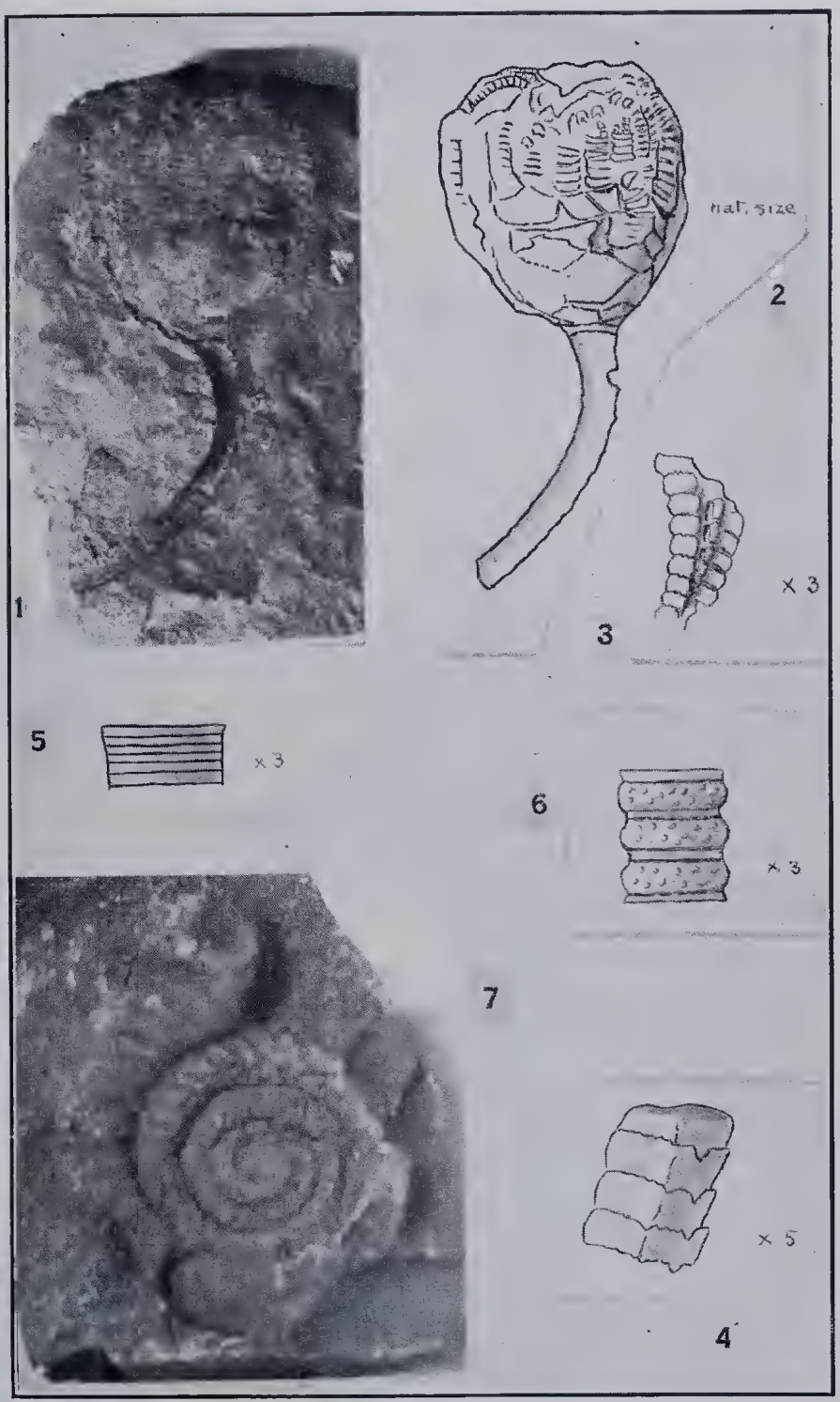
Description.—Shell discoidal, in all but the last stage closely coiled, centrally depressed; consisting of 5 whorls of which the last fifth of the outer whorl is free and reverted. Whorls slightly compressed at sides. Dorsum in region of body chamber compressed and widely concave, the surface transversely conspicuously grooved and crossed by threadlike longitudinal striae. Aperture broadly Y-shaped, the ventral lobe being longer than the others. The lateral lobes are prominent and thickly bordered. Whorls costae, the ribs sub-acute to sharp, closely arranged in the early stages, more widely spaced and prominent in the last two whorls, the outer whorl bearing 28 costae. The shell surface is transversely striated, the striae (10 in intercostal area) reverted obliquely across the costae on the ventral and dorsal.

Dimensions.—Greatest diameter of shell, from the ventral tip to opposite side of the 5th whorl, 56 mm. Diameter of shell across 4th whorl, 38 mm. Approximate thickness of shell on the 4th whorl, 7 mm.; ditto at aperture, 12 mm.

Observations.—This is the first recorded occurrence of the genus *Ophidioceras* in Australia. Although the fossil is preserved in a hard, reddish-brown mudstone, it is not merely a cast, for it shows the delicate ornament of the shell-wall as well as the original costation. The fossil therefore represents a partial replacement of the test.

At first sight *Ophidioceras giblini* might be confused with the shell figured by Etheridge, jun., from the same locality, named *Cycloliuites bowningensis* (Etheridge, jun., 1904, p. 75, pl. viii.), but that the latter, besides having other characters which makes it generically distinct, shows about 36 costae on the strongly depressed whorls. In *C. bowningensis*, moreover, the whorls are closely wound, and strongly impressed against one another, whilst the hyponomic lobe is V-shaped rather than U-shaped as in *Ophidioceras giblini*. The close coiling of the shell in *Cycloliuites* as distinct from the free and reverted termination of *Ophidioceras*, is a generic difference.

There are apparently no very close affinities between *O. giblini* and the species of *Ophidioceras* previously described from England or Bohemia, to which countries the genus has hitherto been restricted.



Lecanocrinus and Ophidioceras: Silurian, Yass, N.S.W.

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Ophidioceras articulatum (Sow.) occurs in the Wenlock shales of Dudley and Ludlow (*Lituites articulatus* J. de C. Sowerby, 1839, p. 622, pl. xi., fig. 5, non fig. 7). It is a small form never more than $1\frac{1}{2}$ inches in diameter, having, however, the same number of annulations to the whorl, from 26 to 28 as compared with 28 in *O. giblini*. *O. articulatum* differs from the present species in having comparatively straight costae on the lateral surface, whereas in *O. giblini* they are strongly recurved, especially in the earlier whorls. The distinct tesselation of the surface in *O. giblini*, which is especially well seen on the earlier whorls, is apparently absent in *O. articulatum*.

The species *Ophidioceras tessellatum* Barrande, occurring in the Silurian (Salopian) of Bohemia (Barrande, 1867, p. 186, pl. xcvii., figs. 13, 14, 16, 17, *pars.*, and 19) resembles the present form in its fine surface ornament, but it is smooth, and has fewer whorls, with only slightly curved costae.

Ophidioceras rudens Barrande has narrower whorls, and is more closely ribbed (Ibid., pl. xlv., figs. 13, 14, 16, 17, *pars*, and 21).

This unique fossil (holotype) is named in honour of Professor L. F. Giblin, D.Sc., M.C., M.A., who presented it to the Commonwealth Palaeontological Collection (Reg. No. 63). It was discovered by Master Ian Filshie.

Horizon and Locality.—Silurian (Bowning Series). Hatton's Corner, near Yass, New South Wales.

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Explanation of Plate X.

Fig. 1. *Lecanocrinus breviarticulatus*, sp. nov. Nearly complete crown with arms and mould of stem. Holotype. Silurian. Hatton's Corner, Yass, N.S. Wales. Nat. size.

Fig. 2. Ditto, with plan of preserved plates. Nat. size.

Fig. 3. Ditto. Portion of arm in ventral aspect with interlocked brachials. × 3.

Fig. 4. Ditto. Four brachials, more highly magnified. × 5.

Fig. 5. Ditto. Proximal columnars showing low platy character. ×3.

Fig. 6. Ditto. Columnars of distal part of stem, with tuberculate surface. × 5.

Fig. 7. *Ophidioceras giblini*, sp. nov. Holotype. Silurian. Hatton's Corner, Yass, N.S. Wales. Nat. size.